Noting paragraph 67, with reference to Figs. 16 and 17, it is indicated that "the housing 21 is a rectangular parallelepiped whose one surface has holes for securing the loudspeakers 1a to 1d."

Looking at the claims, claim 47 is a dependent claim which depends from claim 37. Claim 37 requires "at least one loudspeaker attached to each said at least one housing." Claim 47 further limits the at least one loudspeaker in reciting that "said at least one loudspeaker comprises a plurality of loudspeakers attached to each said at least one housing." In other words, for one housing there are a plurality of loudspeakers attached thereto.

Or, in other words, claim 37 states that there are one or more loudspeakers attached to each of one or more housings. Claim 47 further requires that the one or more loudspeakers in fact comprises a plurality of loudspeakers, i.e. the loudspeakers are plural in number. This is clearly supported by paragraphs 66 and 67 with reference to Figs. 16 and 17 of the specification.

Accordingly, withdrawal of the Examiner's rejection of claim 47 on this basis is respectfully requested.

Claims 17 and 37 Clearly Patentably Define Over Mason, U.S. Patent 5,410,607

The Examiner rejected claims 17, 24, 26, 37, 43 and 45-47 as being anticipated by Mason, U.S. Patent 5,410,607. In section 7 on page 6 of the Office Action, claims 19-23, 25, 38-42 and 44 were rejected as being unpatentable over Mason when taken in view of Fuller et al., U.S. Patent 5,692,053. However, independent claims 17 and 37 contain limitations that are clearly not found in Mason, as will explained below.

As has been clearly discussed in prior responses, the present invention is directed to a noise reduction apparatus for reducing noise that is propagated toward a predetermined space on one side of a wall from an external noise source that is on another side of the wall. A housing 21 is to be attached to a surface of the wall 22 so as to face the external noise source and thereby block a noise propagation path. See Fig. 17. The housing 21 is thus regenerating an enclosed space for noise reduction between the external noise source and the wall.

The loudspeaker 1, e.g. 1a, as shown in Fig. 17, is to be attached to the housing so as to face the external noise source and thereby block the noise propagation path, and is for radiating

sound into the enclosed space. A sound detector 2 is to be placed within the enclosed space for detecting sound that is propagated from the external noise source through the loudspeaker.

A control arrangement 3 is for causing the loudspeaker to radiate sound so as to minimize the sound that is to be detected by the sound detector, based on a result corresponding to the sound as detected by the sound detector.

Thus a feature of the present invention is placing the sound detector within the enclosed space, and radiating the control sound toward the enclosed space including the sound detector. By reducing the noise that is inside the enclosed space, interference of sounds that are not detected by the sound detector is prevented, improving the noise reduction effect.

In looking at Fig. 17, thus, it can be seen that the predetermined space that is on the one side of the wall 22 is on the right-hand side, and the external noise source is on the left-hand side of the wall. The housing is to be attached to the surface of the wall 22 so as to face the external noise source, i.e. facing away from the predetermined space and toward the source of the noise.

In the rejection proposed by the Examiner, the Examiner states that there is a housing to be attached to a surface 102 of the wall so as to face the external noise source (102 and N noise by vibration surface 102) and thereby blocking noise propagation path for generating an enclosed spaces (reads on, aircraft cabin and see col. 2 line 35-52) for noise reduction between external noise source (102) and the wall." However, claim 17 states that the housing is for generating an enclosed space for noise reduction "between the external noise source and the wall." Thus it is defined in the claim that the enclosed space is formed between the external noise source and the wall. While the Examiner makes reference to the aircraft cabin in the discussion in column 2, it is rather unclear how the Examiner deems that the enclosed space which is set forth in claim 17 is met by Mason, and whether it is intended that the reference to the aircraft cabin be a reference to the enclosed space. In either view, it is submitted that Mason does not properly disclose or provide any reason to have the feature of the enclosed space as defined in claims 17 and 37 for noise reduction between the external noise source and the wall.

Looking at Mason, Mason is directed to a method and an apparatus for reducing noise that is radiated from a complex vibrating surface. Noting the first paragraph of the Summary of

the Invention, such complex vibrating structure is one that contacts or encloses the medium, for example, the noise field in an aircraft cabin, which noise is generated primarily by vibrations of the fuselage. In the specific example of Fig. 2, the vibrating surface is 102. An enclosure 106 is attached to the vibrating surface 102. An acoustic driver 104, for example a loudspeaker, is seated within the enclosure 106. A motion sensor 200 can be attached directly to the vibrating surface 102 through an opening in the bottom of the enclosure 106 or attached to the bottom of the enclosure 106; see the first two paragraphs under the Detailed Description of the Preferred Embodiments.

Noting the first complete paragraph at the top of column 5, an example of the motion sensor 200 is an accelerometer. As can be seen from the discussion from line 26 of column 5 to line 47 of column 5, a noise wave front N produced by the vibrating surface 102 can be at least partially canceled by an anti-noise wave front A produced by acoustic driver 104, the wave front N and the anti-noise wave front A being 180° out of phase. See Fig. 2.

Accordingly, in Mason the acoustic driver 104 radiates the wave front into, for example, the aircraft cabin, which is where the noise wave front from the vibrating surface 102 is also directed.

Accordingly, Mason does not disclose a housing for generating an enclosed space for noise reduction between the external noise source and the wall. If the housing in Mason is reference number 106, its enclosed space does not provide noise reduction between the external noise source and the wall. Rather, in Mason a speaker propagates sound toward the outside of the enclosed space of housing 106, into the aircraft cabin. This is away from the noise source, which is the vibrating surface 102.

Comparing Mason with Fig. 17 of the present application, it can be seen that there is a correspondence between the "aircraft cabin" of Mason and the inside of the wall 22 in Fig. 17, i.e. the right-hand side. In Mason, the space in which a person is present is the aircraft cabin. With the present invention, the space in which a person is present is the space that is on the right-hand side of the wall 22, that is, the space that is on the opposite side of the wall from the noise source.

Thus claim 17 of the present invention defines the housing, to be attached to the surface of the wall, so as to face the external noise source, and thereby block the noise propagation path, for generating the enclosed space for noise reduction between the external noise source and the wall. The housing is provided to form the enclosed space, which is where the noise reduction takes place. But in Mason, such noise reduction takes place in the aircraft cabin.

It appears that the Examiner is reading the enclosed space of claim 17 as the aircraft cabin. However, this is not consistent in that the aircraft cabin is not defined by the housing. For example, if the aircraft cabin is the enclosed space, it is not defined by the housing, and the sound detector is not placed within the enclosed space, as it is placed within the housing 106 in Mason.

It should be emphasized that, according to the structure defined in claim 17, for example, the noise reduction apparatus of the present invention operates by the loudspeaker radiating sound into the enclosed space. The sound detector is placed within the enclosed space and detects the sound that is propagated from the external noise source through the loudspeaker. A control arrangement then causes the loudspeaker to radiate sound so as to minimize the sound that is detected by the sound detector based on a result corresponding to the sound as detected by the sound detector.

By contrast, in Mason the motion detector 200 detects vibration of the surface 102, which is used to control the output of the acoustic driver 104. The control arrangement of Mason thus does not operate to minimize the sound that is to be detected by the sound detector, because it detects the noise vibration of the surface 102, then operates the acoustic driver 104, but does not detect the output of the acoustic driver. With the present invention, with the sound detector placed within the enclosed space, and detecting the sound propagated from the external noise source through the loudspeaker, and the loudspeaker radiating sound into the enclosed space, the control arrangement causes the loudspeaker to radiate sound so as to minimize the sound to be detected by the sound detector. This does not happen in Mason, and thus Mason does not have a control arrangement as claimed in claim 17.

As such, it can be seen that claim 17 clearly defines over Mason. Independent claim 37 further emphasizes these distinctions by reciting that the at least one housing is attached to the

surface of the wall so as to face the external noise source, block the noise propagation path and generate the enclosed space for noise reduction between the external noise source and the wall. These limitations are not met by Mason. Claim 37 further distinguishes over Mason for the additional reasons discussed above with respect to claim 17.

From the above it is respectfully submitted to be clear that the present invention as defined by independent claims 17 and 37 clearly patentably distinguishes over Mason. Indication of such is respectfully requested. Further discussion of the additional distinctions that are provided by the dependent claims, and the secondary reference to Fuller, is not deemed to be necessary at this point in view of the above clear difference between the present invention and Mason. Accordingly, the Examiner is requested to indicate the allowability of all of these claims.

In view of the above remarks, it is submitted that the present application is now in condition for allowance, and the Examiner is requested to pass the case to issue. If the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact Applicants' undersigned representative.

Respectfully submitted,

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